

Shelby County Health Department

Legionnaires Disease Investigation Summary Report

Introduction

In April and May, 2010, six Shelby County residents became sick with Legionnaires Disease. All six cases were laboratory confirmed; five cases were Legionella antigen urine positive and one case was Legionella pneumo PCR positive.

On May 19th, a physician made a phone report of a Legionnaire case. The physician also stated that there might be other cases within the same hospital system. The Shelby County Health Department's (SCHD) Epidemiology Section followed up with the hospitals and found three additional cases, which brought the total reports for May 19th to four cases. In addition, the Epidemiology Section was already in the process of investigating two previously reported cases.

A total of six cases were identified by the end of May 19th. A Legionnaire's Disease outbreak investigation was launched based on the information gathered so far. The on-going investigation was communicated to the Tennessee Department of Health (TDH).

A week later, the Epidemiology Section learned of yet another case from the hospital system that made the initial report. Two weeks later three more Legionella cases were reported to the Health Department.

Epidemiological Activities

- **Active Surveillance:** After the identification of the Legionnaire cases, SCHD's Epidemiology Section tried to reach as many cases as possible for additional epidemiologic information. The Epidemiology Section was also in contact with Infection Control Practitioners (ICP) to alert and inform them of the situation and to request information on known cases. Infection Control Practitioners were also encouraged to look out for and immediately report similar cases to the Epidemiology Section. The Epidemiology Section also followed up with the hospitals daily after the initial report was made. There were no new reported cases as of May 27. Active surveillance of the hospital during shift change continued the following days. On May 28, the Epidemiology Section learned of one new case during active surveillance of hospitals. This new case was investigated accordingly. About two weeks later, three additional cases were reported to the Health Department.

In addition to active surveillance, the Epidemiology Section was in contact with family members of the cases who were unreachable. All acquired information was documented in a database.

- **Survey:** A special survey was developed to meet the specific needs of this particular investigation. The survey combined the CDC's questionnaire for Legionnaire's Disease with 15 other questions tailored toward recent water exposures at home, work and during travel. The survey also considered the two separate but recent severe rain and floods that occurred in the region. The Epidemiology Section consulted with TDH on the new and expanded survey. The

survey was reviewed and edited by the state then administered to four of the six cases by SCHD epidemiologists between May 22nd and 24th. The newly reported case was interviewed between May 31st and June 9, bringing the total number of Legionella cases in 2010 to 10 so far.

- Environmental testing: Analyzing the environmental specimens without an epidemiologic link or subtype matching did not seem very meaningful in this instance. According to expert knowledge, it would not be unexpected to find Legionella in the cases' residential plumbing, and it would be difficult to prescribe some action based on a single illness and a finding of Legionella in a pipe in that building. Therefore, environmental testing would not be necessary in this instance.

Results

Survey results are detailed in separate document. Information gathered on all cases did not reveal any epidemiological links. All cases had already been admitted and treated at hospitals with antibiotics by the time the events were reported to the SCHD's Epidemiology Section, which affected the ability to perform subtype matching of organism. This information would have been valuable in investigating and establishing a commonality between cases. The hospitals were still encouraged to submit sputum specimens to the state lab for further testing.

Limitations

The main limitation the Epidemiology Section encountered during this investigation was the inability to collect sputum specimen samples to subtype the organism from the cases before treatment was administered.

We were also informed that the insurance company of one of the cases would not pay for a sputum sample collection because the case's physicians found no clinical reason for collecting one. Another limitation is the inability to reach certain cases to administer the expanded survey.

Updates

As of May 28th, five of the seven Legionella cases had been discharged from the hospitals. The other two cases remain in the ICU on full ventilation support. According to reports from Infection Control Nurses (ICN), both cases have shown very little improvement in status since their admittance on May 10th and May 14th.

On June 1st, the Epidemiology Section found that, one of the hospitalized Legionella cases was showing considerable improvements and was moved out of ICU into a floor bed, though he was on hemodialysis. This patient was discharged from the hospital on June 9th. The other patient remains in ICU with little to no improvements.

The latter reports of Legionella have all been discharged as of June 9, 2010.

Recommendations

There will be no further action taken based on the information gathered so far. However, the Epidemiology Section is maintaining active surveillance of hospitals to ensure timely notification of similar cases. The limitations of specimen collection and subtype matching will hopefully be addressed with early notification (before treatment with antibiotics). In the event of additional cases, the investigation will be re-opened to determine whether there are any epidemiologic links.

Table 1: 2010 Legionnaires Disease Outbreak in Shelby County: Disease timeline of case 1

CASE	Case 1																⊖																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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[illegible]


⊕ Illness onset Days during which infection may have taken place, based on an incubation period of 2-14 day Date admitted to the hospital and length of stay at hospital

 Day of Severe Rain and flooding in some Memphis Areas  Discharged from Hospital

Table 2: 2010 Legionnaires Disease Outbreak in Shelby County: Disease timeline of cases 2-6

[illegible]

 Days during which infection may have taken place, based on an incubation period of 2-14 day
 Date admitted to the hospital and length of stay at hospital

 Day of Severe Rain and flooding in some Memphis Areas

*Cases 3 and 6 are still in hospital as of June 2, 2010






 Discharged from Hospital

Table 3: 2010 Legionnaires Disease Outbreak in Shelby County: Disease timeline of case 7

CASE	Case 7																⊖	H	H	H														
	Case 9															⊖ H	H	H	H															
	Case 10																			⊖			H	H	H	H								
Weekday		F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S		
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		MAY																										JUNE						

Θ Illness onset

 Days during which infection may have taken place, based on an incubation period of 2-14 day

 Date admitted to the hospital and length of stay at hospital



Discharged from Hospital

Investigators:

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Jennifer Kmet, MPH, Epidemiologist

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